INFORMATION INPUT AND OUTPUT SYSTEM, METHOD, STORAGE MEDIUM, AND CARRIER WAVE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an information input and output system that indicates a screen to make it possible to input information using a display device and a coordinate input device.

2. Description of the Related Art

In recent years, there has been provided an information input and output system, which includes a display device that displays characters and images and a coordinate input device that has an information input surface (touch panel surface) on the entire surface of the display device, and a control device that performs display control of the display device based on the input from the coordinate input device, and which constitutes display and writing surfaces of an electronic blackboard using the display device and coordinate input device.

For example, Smart 2000 (made by SMART Technologies Inc.) performs processing for capturing handwritten information into a computer using a coordinate input device (writing surface) provided in front of a projected plan (displayed figure) of the panel in a state that images such as characters, pictures, figures, graphics, and the like are projected using a liquid crystal projector connected to a computer. Then, handwritten information and image information are combined with each other by the computer such that combined information can be displayed in real time through the liquid crystal projector again.

In such an information input and output system, since an image input by the coordinate input and output device can be superimposed on a drawing displayed on the screen by the display device, this system has been widely used in a conference, presentation, educational scene, etc, and the effect of use on this system is highly evaluated.

Further, a function of performing communication for voice and image is incorporated into such the information input and output system and communication between remote locations is connected by a communication line, and this is thereby used as an electronic conferencing system.

Furthermore, various types of techniques are proposed as a coordinate input device to be used in such the information input and output system. Namely, as the coordinate input device, there is proposed an optical type (for example, Unexamined Japanese Patent Application KOKAI Publication No. H11-110116) in addition to a type having a physical surface such as a touch panel surface.

By the way, in the case where the aforementioned information input and output system is used to operate various kinds of applications on the screen, there can be considered that a tool bar is displayed on the screen and an icon on the tool bar is indicated by a pointer member such as fingers of one hand, pen, etc, or a dedicated remote control is operated. In the case of indicating the icon by the pointer member, the coordinate input device detects the coordinates of position indicated by the corresponding pointer member to determine which icon is indicated.

However, it is generally assumed that the display used in the information input and output system is a large size of such as such as 40 inches or 50 inches. In the case of indicating the icons of the tool bars on the screen (they are generally displayed at upper and lower or right and left ends of the screen), a user must stretch his/her limbs largely, or walk to the position where a desired icon is displayed every time when clicking the icon. Or, in the case where the user performs operations while sitting on the chair, the user must specially stand up from his/her chair every time when clicking a desired icon, causing a problem that the operation is extremely complicated.

Moreover, in the case where the operation is performed by the dedicated remote control as mentioned above, the operation on the screen of information input and output system cannot be carried out. For this reason, in the case where the user performs the operation as viewing the screen or explaining, there is a problem that the operation is extremely complicated.

SUMMARY OF THE INVENTION

The present invention has been made with consideration given to the aforementioned problems, and an object of the present invention is to make it possible to operate an icon on a screen at hand so as to improve system operationality.

Moreover, another object of the present invention is to make it possible to easily distinguish between an operation for displaying an icon and other operation with no object of displaying the icon in order to improve operationality.

In order to attain the above object, according to a first aspect of the present invention, there is provided an information input and output system comprising a display device that display an image; a coordinate input device that detects coordinates of a plurality of positions indicated on a screen of the display device; a storage unit that prestores one or a plurality of operation images using as images for an operation; and an operation image control unit, when the coordinate input device detects the coordinates of the plurality of positions indicated on the screen, that displays an operation image stored in the storage unit at a predetermined position on the screen of the display device based on the coordinates.

This makes it possible to display a necessary operation image close to the indicated position by a simple operation that indicates a plurality of locations on the screen with fingers of one hand. For this reason, the operation image can be operated on the screen at hand, so that operationality can be improved. Further, in the case where one location on the screen is indicated, the operation image is not displayed, making it possible to easily distinguish between the operation with no object of displaying the operation image (the operation that indicates one location) and the operation that displays the operation image.

Additionally, in this specification, the operation images refer to graphics displayed on the screen. The user performs a predetermined operation to the graphics with his/her fingers of one hand and receives the performance of various operations to the information input and output system. The graphics include an icon, a dial, slider bar, pallet, etc.

It is possible to comprise a control unit that measures time between points where the plurality of positions are respectively indicated and determines whether or not the measured time is a predetermined time or less.

The operation image control unit may display the operation image when the measured time is determined as a predetermined time or less.

This makes it possible to easily distinguish between the operation that indicates a plurality of locations on the screen with no object of displaying the operation image and the operation that indicates a plurality of locations to display the operation image since the operation image is not displayed when time interval is set to some extent to indicate a plurality of locations on the screen sequentially.